APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/707,604	11/07/2000	Nan Shan Hwu	401 P 235 (SAA-52)	9654

7590 02/20/2004		EXAMINER

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ART UNIT	PAPER NUMBER
2121	7

DATE MAILED: 02/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/707,604	HWU ET AL.
	Examiner	Art Unit
	Aaron Perez-Daple	2121

-- The MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _12 January 2004_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-11,13-15 and 17-22_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-11, 13-15 and 17-22_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _6_.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This Action is in response to Amendment filed 1/12/04, which has been fully considered.

2.   Amended claims 1-11, 13-15 and 17-22 are presented for examination.

3.   Claims 12 and 16 are cancelled by Applicant.

4.   This Action is made FINAL.

Response to Arguments

Drawings

5.   The objection to the drawings is withdrawn in view of Applicant's Amendment.

112 Rejections

6.   The rejection of claims 7, 14 and 18 under 35 U.S.C. 112, first paragraph, is hereby

withdrawn in view of Applicant's arguments, which are found persuasive. However, because

Applicant has not presented a specific method for exchanging MAC addresses, the Examiner

finds that any known method of switching MAC addresses meets the limitations of the

claims. Moreover, Applicant's arguments of page 8, second paragraph, constitute an implicit

admission that such methods are well known in the art. Otherwise, the disclosure would not

be enabling, since Applicant fails to teach such a method [e.g. "A patent need not teach, and

preferably omits, what is well known in the art."].

7.   The rejection of claim 19 under 35 U.S.C. 112, first paragraph, is hereby maintained.

Specifically, the original claims as filed may be relied on without additional support from the

specification or drawings only when the claims themselves constitute "a clear disclosure of

this subject matter [MPEP 608.01(l)]." The Examiner finds that claim 19 is not sufficient to

constitute a clear disclosure of the claimed subject matter because it is not clear what steps

are included in "aborting all connections" nor how this "aborting" is accomplished. One of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

103 Rejections

7.   Applicant's arguments filed 1/12/04 have been fully considered but they are not persuasive.

8.   With respect to independent claims 1, 9 and 15, Applicant admits that Pardillos discloses "a universal device for coupling a computer bus to a controller of a group of peripherals" and further that Pardillos discloses, "a known advantage of using fiber optics for increased transmission rate" [pg. 12 of Amendment, third paragraph]. Applicant asserts that because Pardillos fails to specifically disclose a primary and secondary controller coupled to the bus, Pardillos fails to teach Applicant's invention.

The Examiner finds that Pardillos does not need to specifically teach a primary and secondary controller in order to suggest modifying the prior art to meet the claimed limitations. Specifically, Applicant's admitted prior art (specification, pg. 5, line 25 – pg. 7, line 14, "Controllers have been...the secondary controller.") (hereinafter AAPA) and Flood et al. (US 5,997,166) (hereinafter Flood) teach that it is well-known in the art to use a primary and secondary controller. As admitted by Applicant, Pardillos teaches using Ethernet communications over a fiber-optic cable in order to increase the transmission rate of a controller network [col. 1, lines 41-45, "One of the numerous...100 megabits per second.";   col. 10, lines 42-48, "Each of these zones...such as FDDI."]. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify AAPA by using a high speed fiber optic network cable operably connecting the first and second controllers and

facilitating Ethernet communication, because this would allow for faster transmission and response over the network, as taught by Pardillos [col. 1, lines 41-45, "One of the numerous...100 megabits per second."]. Further evidence that the prior art suggests using Ethernet communications between a primary and secondary controller can be found in previously cited reference Flood et al. (US 5,77,874) [Applicant is referred to col. 4, lines 62-67, "The backup modules...one system to the other."].

Therefore claims 1and 9 are properly rejected under 35 U.S.C. 103(a) as being obvious over AAPA in view of Pardillos.

Therefore, claim 15 is properly rejected under 35 U.S.C. 103(a) as being obvious over Flood (US 5,997,166) in view of Pardillos and in further view of Yamamoto (US 6,049,825).

9.   Because independent claims 1, 9 and 15 have been shown to be properly rejected, dependent claims 2-8, 10-14 and 16-20 are similarly found to be properly rejected. Applicant makes no further arguments with respect to the dependent claims.

Specification

10.   The disclosure is objected to because it fails to describe the step of "aborting all connections" as recited in claim 19.

Appropriate correction is required.

Claim Objections

11.   Claims 21 are objected to because two claims 21 are presented. Applicant is required to renumber or cancel the claims.

Claim Rejections - 35 USC § 103

12.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

13.   **Claims 1, 2, 4, 5, 8, 9 and 21** are rejected under 35 U.S.C. 103(a) as being

unpatentable over applicant's admitted prior art (specification, pg. 5, line 25 – pg. 7, line 14,

"Controllers have been...the secondary controller.") (hereinafter AAPA) in view of Pardillos

et al (US 5,367,646) (hereinafter Pardillos).

14.   As for claim 1 and 9, AAPA teaches an active standby system and method for a

control system, the active standby system comprising:

a first and second controller, each controller having an operating state [controllers 12,

Fig. 1]; and

a high speed fiber optic network cable operably connecting the first and second

controllers for transferring data between the controllers [serial link 17, Fig. 1].

AAPA teaches the transfer of data between the controllers at either a low-speed or high-

speed [pg. 6, lines 23-24, "The serial link...or high-speed."], however AAPA does not

specifically teach using a fiber optic cable for facilitating Ethernet communication. Pardillos

teaches using a fiber optic cable for facilitating Ethernet communication [col. 1, lines 41-45,

"One of the numerous...100 megabits per second."; col. 10, lines 42-48, "Each of these

zones...such as FDDI."].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify AAPA by using a fiber optic cable for facilitating Ethernet communication, because this would allow for faster transmission and response over the network, as taught by Pardillos [col. 1, lines 41-45, "One of the numerous…100 megabits per second."].

15.   As for claim 2, AAPA discloses the active standby system of claim 1 and the method of claim 9 wherein each controller comprises:

a processor [CPU 26, Fig. 1];

a co-processor [hot standby module 20, Fig. 1];

an operating system executed by the processor [inherent]; and,

a co-operating system executed by the co-processor [inherent] wherein the operating system and the co-operating system cooperate to transfer data between the first and second controllers [col. 7, lines 7-14, "Communication between the…the secondary controller."].

16.   As for claim 4, AAPA discloses the active standby system of claim 3 wherein each controller further comprises a remote IO head [remote IO heads 18, Fig. 1] and reach remote IO head is operably connected together and to a remote IO drop [remote IO drops 24, Fig. 1].

17.   As for claim 5, AAPA discloses the active standby system of claim 4 further comprising at least one processor device operably connected to the first and second controllers [processor unit 19, Fig. 1].

18.   As for claim 8, AAPA discloses the active standby system of claim 1 wherein each controller is operably connected to a processor unit [processor unit 19, Fig. 1].

19.   As for claims 21, AAPA discloses the system of claim 1 and method of claim 9 wherein each controller includes a backplane [pg. 7, first paragraph]. AAPA does not specifically disclose Ethernet communication between the first and second controllers bypassing the backplanes at a rate of at least 100 Mb/s. Pardillos teaches transferring data on a controller network at a rate of at least 100 Mb/s [col. 1, lines 41-45, "One of the numerous...100 megabits per second."].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify AAPA by using Ethernet communication between the first and second controllers and bypassing the backplanes at a rate of at least 100 Mb/s, because this would allow for faster transmission and response over the network, as taught by Pardillos [col. 1, lines 41-45, "One of the numerous...100 megabits per second."].

20.   **Claims 3, 6, 7, 10, 11, 13, and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Pardillos and in further view of Yamamoto (US 6,049,825).

21.   As for claims 3 and 10, neither AAPA nor Pardillos specifically disclose determining the network identifier of each controller from the operating state of each respective controller. However, Yamamoto discloses a method for switching between duplicated elements of a network which, as one of ordinary skill in the art would recognize, may be used to switch between the primary and secondary controllers in the network disclosed by AAPA [col. 5, lines 47-65, "To accomplish the above...network interface layer."]. Yamamoto further discloses determining the network identifier of each element by the operating state of each respective element [col. 5, lines 16-24, "To accomplish the

above...has been detected."]. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of AAPA and Pardillos by determining the network identifier of each controller from the operating state of each respective controller, because this would allow automatically switching between the primary and secondary controllers with a quick recovery time after a failure, as taught by Yamamoto [col. 5, lines 9-14, "Taking the above...the TCP/IP protocol."].

22.   As for claims 6 and 13, neither AAPA nor Pardillos disclose an active standby system of claims 3 and 10 wherein the network identifier is an Internet Protocol address. Yamamoto discloses an active standby system wherein the network identifier is an Internet Protocol address [col. 5, lines 47-65, "To accomplish the above...network interface layer."]. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify AAPA and Pardillos by using an Internet Protocol address as the network identifier, because this would allow automatically switching between the primary and secondary controllers with a quick recovery time, as taught by Yamamoto [col. 5, lines 9-14, "Taking the above...the TCP/IP protocol."].

23.   As for claims 7 and 14, neither AAPA, Pardillos nor Yamamoto specifically disclose an active standby system of claims 3 and 10 wherein the network identifier is a Media Access Control (MAC) address. However, Yamamoto does disclose a method wherein a network adapter has both an IP and a MAC address, and wherein the IP address is determined by the operating state of its respective adapter [col. 5, lines 47-65, "To accomplish the above...network interface layer."]. It would have been obvious to one of ordinary skill in the art at the time of the invention that the teachings of Flood, Pardillos and

Yamamoto could be modified by determining the MAC address, rather than the IP address, from the operating state of the respective controller in order to achieve the objective of switching the primary and secondary controllers.

24.   As for claim 11, AAPA discloses a method similar to claim 10 wherein each controller comprises:

a processor [CPU 26, Fig. 1];

a co-processor [hot standby module 20, Fig. 1];

an operating system executed by the processor [inherent]; and,

a co-operating system executed by the co-processor [inherent] wherein the operating system and the co-operating system cooperate to transfer data between the first and second controllers via the fiber optic cable [col. 7, lines 7-14, "Communication between the... the secondary controller."].

25.   **Claims 15, 17-19 and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Flood (US 5,997,166) in view of Pardillos and in further view of Yamamoto (US 6,049,825).

As for claim 15, Flood teaches a method for providing an active standby control system comprising a first and second controller, each controller having an operating state, the method comprising the steps of:

forming a network by operably connecting the first and second controllers with a cable for transmitting data between the controllers [col. 4, lines 5-8, "Included among the... high-speed link 24."; Fig. 1];

placing one controller in a primary state and the other controller in a secondary state [col. 1, lines 25-33, "Industrial controllers must...with minimal interruption."];

assigning a network identifier to designate each controller [inherent for communication on the network];

sensing the operating state of the primary mode controller [col. 2, lines 3-10, "Accordingly, the present invention...its functional modules."; col. 8, lines 49-53, "Upon the occurrence...the primary chassis."].

Although Flood discloses transmitting data between the controllers over a high-speed data link [col. 4, lines 5-8, "Included among the...high-speed link 24."], Flood does not specifically disclose transmitting data between the controllers over a fiber optic cable utilizing Ethernet communication. Pardillos teaches transferring data over a controller network over a fiber optic cable utilizing Ethernet communication [col. 1, lines 41-45, "One of the numerous...100 megabits per second."; col. 10, lines 42-48, "Each of these zones...such as FDDI."]. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Flood by transmitting data between the controllers over a fiber optic cable at a rate of at least 100 Mb/s, because this would allow for faster transmission and response over the network, as taught by Pardillos [col. 1, lines 41-45, "One of the numerous...100 megabits per second."].

Although Flood discloses switching the primary and secondary controllers on the network [col. 8, lines 49-53, "Upon the occurrence...the primary chassis."], Flood does not specifically disclose a method for accomplishing this switch. Furthermore, Flood does not disclose transmitting a reverse address resolution protocol (RARP) message on the network,

wherein the newly designated primary controller resumes network operations. Yamamoto discloses a method for switching between duplicated elements of a network which, as one of ordinary skill in the art would recognize, may be used to switch between the primary and secondary controllers in the network disclosed by Flood. Specifically, Yamamoto discloses swapping the network identifiers between the first and second duplicated elements by sending an ARP message over a layered network [col. 5, lines 47-65, "To accomplish the above...network interface layer."]. Furthermore, Yamamoto discloses that an RARP message may be used in the reverse manner of an ARP request in order for a device to identify its IP address on the network [col. 6, line 61 – col. 7, line 5, "In the network interface...Resolution Protocol (RARP)."].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Flood and Pardillos with the teachings of Yamamoto by swapping the network identifiers between the first and second controllers, because this would enable automatically switching between the primary and secondary controllers with a quick recovery time after a failure, as taught by Yamamoto [col. 5, lines 9-14, "Taking the above...the TCP/IP protocol."]. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Flood and Pardillos with the teachings of Yamamoto by transmitting a reverse address resolution protocol (RARP) message on the network, wherein the newly designated primary controller resumes network operations, because this would allow the newly designated primary controller to ascertain its IP address before transmitting commands, as taught by Yamamoto [col. 6, line 61 – col. 7, line 5, "In the network interface...Resolution Protocol (RARP)."].

26.   As for claim 17, neither Flood nor Pardillos specifically disclose the method of claim 18

wherein the network identifier is an Internet Protocol address.   Yamamoto discloses a

method for swapping network identifiers wherein the network identifier is an Internet

Protocol address [col. 5, lines 47-65, "To accomplish the above...network interface layer."].

It would have been obvious to one of ordinary skill in the art at the time of the invention to

modify Flood and Pardillos by using an Internet Protocol address as the network identifier,

because this would allow automatically switching between the primary and secondary

controllers with a quick recovery time, as taught by Yamamoto [col. 5, lines 9-14, "Taking

the above...the TCP/IP protocol."].

27.   As for claim 18, neither Flood, Pardillos nor Yamamoto specifically disclose the method

of claim 18 wherein the network identifier is a Media Access Control (MAC) address.

However, Yamamoto does disclose a method wherein a network adapter has both an IP and a

MAC address, and wherein the IP address associated with the MAC address is switched,

thereby switching the IP address of the network adapter [col. 5, lines 47-65, "To accomplish

the above...network interface layer."]. It would have been obvious to one of ordinary skill in

the art at the time of the invention that the teachings of Flood, Pardillos and Yamamoto could

be modified by swapping the MAC addresses rather than the IP addresses in order to achieve

the objective of switching the primary and secondary controllers.

28.   As for claim 19, neither Flood, Pardillos nor Yamamoto specifically disclose aborting all

connections to the first and second controllers. It would have been obvious to one of

ordinary skill in the art at the time of the invention to modify Flood, Pardillos and Yamamoto

by aborting all connections to the first and second controllers, because this would allow for

an emergency shutdown of the system or resetting of the system.

29.   As for claim 22, Flood discloses each controller having a backplane [Fig. 1, col. 1, lines

17-24, "Typically, an industrial…more modules fail."]. Flood does not specifically disclose

Ethernet communication between the first and second controllers bypassing the backplanes at

a rate of at least 100 Mb/s. Pardillos teaches transferring data on a controller network at a

rate of at least 100 Mb/s [col. 1, lines 41-45, "One of the numerous…100 megabits per

second."].

It would have been obvious to one of ordinary skill in the art at the time of the invention

to modify Flood by using Ethernet communication between the first and second controllers

and bypassing the backplanes at a rate of at least 100 Mb/s, because this would allow for

faster transmission and response over the network, as taught by Pardillos [col. 1, lines 41-45,

"One of the numerous…100 megabits per second."].

30.   **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Flood in view of

Pardillos in further view of Yamamoto and in further view of Chevallier (US 6,584,019).

Neither Flood, Pardillos nor Yamamoto specifically disclose a processor nor an operating

system embedded in Flash RAM. However, Chevallier discloses a processor and operating

system embedded in Flash RAM [col. 9, lines 11-33, "An integrated circuit…are

embedded."]. It would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the teachings of Flood, Pardillos and Yamamoto by embedding the

processor, co-processor, operating system and co-operating system in Flash RAM, because

this would allow for the use of a single integrated circuit chip, as taught by Chevallier [col. 9, lines 11-33, "An integrated circuit...are embedded."].

Conclusion

31.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Perez-Daple whose telephone number is 703-305-4897. The examiner can normally be reached on 9am - 6pm.
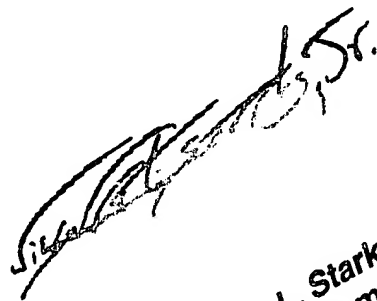
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on 703-305-0282. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

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(toll-free).

2/16/04

Aaron Perez-Daple

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